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Short communication

HIGHLY ORGANIZED BIOPOLYMER STRUCTURES FROM THE ECTEXINE OF THALICTRUM FLAVUM L.

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On partially degraded exines biopolymer structures in Å dimension were established by TEM method. Using the modified Markham rotation method a quasi-crystalloid basic biopolymer skeleton in the exine was established (KEDVES 1988, 1989). Sub-units of the exine in nanometer dimension were described in several papers of ROWLEY et al., and by SOUTHWORTH; for example: ROWLEY et al. (1980), SOUTHWORTH (1986). To establish the different levels of organization of the sporoderm an attempt was made (KEDVES, 1989). Beside the solvent method we started to use the high temperature effect, too (cf. SENGUPTA and ROWLEY, 1974).

20 mg pollen grains of *Thalictrum flavum* L.were heated at 100 °C for 2 hours, on 20 June, 1988. After heating 1 ml 2-aminoethanol was added to the pollen material. Length of time: 24^h, temperature 30 °C. For TEM: post-fixation with OsO_4 aq. dil. embedding in Araldite (Durcupan, Fluka).

On the TEM pictures, highly organized biopolymer structures in nanometer dimension were observed (Plate I, fig. 1-4). These structures are similar or identical with the model of ROWLEY and FLYNN (1968), and FLYNN and ROWLEY (1971), cf. ROWLEY et al. (1981). Helical structures and regularly arranged points with strong electron affinity were observed. These points may be identical with the "crossover points" of ROWLEY et al. (1981).

It seems that the solvent and the oxidizing method combined with the high temperature effect may be one way to get more data on the highly organized biopolymer structures of the sporoderm. As regards the heating we need to emphasize that after heating the sporopollenin becomes more aromatized; BROOKS (1971). Following POTONIÉ and REHNELT (1971) during the fossilization process the same alteration was established.

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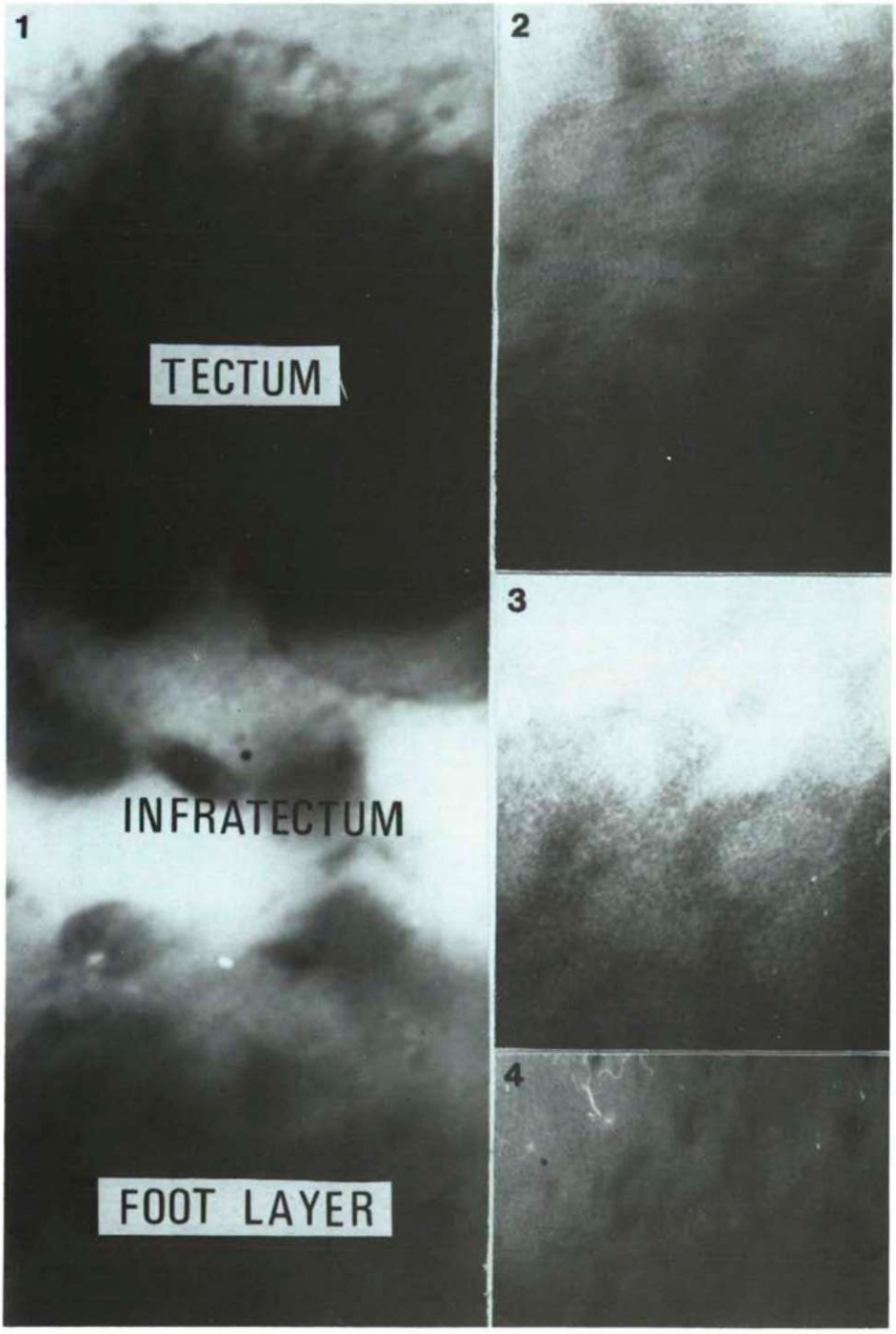
Plate I

1-4. *Thalictrum flavum* L., collected from the Botanical Garden of the University by Dr. L. TÉCSI on the 20 June 1988, after experiment No 285.

1. TEM picture of the ectexine, negative No 0107, x50000, well shown are the biopolymer structure in the tectum. No similar organization in the infratectal and foot layer.

2,3. Magnified part from the biopolymer structure of the tectum, negative No 0107, x250000.

4. Highly organized biopolymer structure from the tectum, negative No 0106, x50000.


1
TECTUM
INFRATECTUM
FOOT LAYER
2
3
4